AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A computer-implemented method comprising:

optimizing a multivariate representation of resources using multiple single-variable optimizations, wherein the resources are used in producing a set of products, and the resources, the set of products and their respective connectivities are represented in a product space plan, the optimizing comprising converting a non-linear expected value function associated with the resources and products into a closed form expression;

transforming the product space plan into a working transformed space plan, wherein:

the products are transformed into working elements,

the transforming includes taking a transformation of the product space plan to provide the working transformed space plan, and

the transforming maps a distribution induced on the resources by a product demand distribution into a distribution with a diagonal covariance matrix;

performing a loading step to form elemental blocks as a function of a single variable of the multivariate representation with elements being loaded with resources that gate production of the element;

examining the elemental blocks to determine if a first element has not been loaded with a corresponding first resource that gates production of the first element;

if the examining indicates that the first element has not been loaded with the first resource, performing a re-loading step to form elemental blocks as a function of a single variable of the multivariate representation with the first element being reloaded with the first resource;

solving for the maximum of each elemental block over each associated single variable of the multivariate representation, wherein the solving is performed by a computer; and

determining and presenting the optimum level of resources as a function of the solved for maximums.

2. (Original) The method of Claim 1, wherein the loading and re-loading steps result in an equilibrium configuration that provides the minimum amount of resources to produce any given amount of products across the whole plan.

3. (Original) The method of Claim 1, wherein the loading step further includes:

sequentially looking at each present working element;

determining if each associated resource gates production of the element,

if gating occurs, then unloading the resource from a prior element if so loaded, and

loading the resource onto the present element.

4. (Original) The method of Claim 3, wherein the reloading step further includes:

sequentially looking at each present working element;

reloading each unloaded resource back onto the element;

redetermining if the element is gated by each reloaded resource;

if the element is so gated, then merging the elements sharing each gating resource into a common elemental block which is a function of a single variable.

5. (Original) The method of Claim 3, wherein step of determining that gating occurs includes calculating a new maximum for the loaded element and determining if any remaining components further gate the maximum.

6. (Original) The method of Claim 4, wherein step of redetermining that gating occurs includes recalculating a new maximum for the reloaded element and determining if any remaining components further gate the maximum.

7. (Original) The method of Claim 4, wherein the step of merging the elements results in an elemental block that is a sub-plan of the overall plan, but which is a function of a single variable.

8. (Original) The method of Claim 7, wherein the merged elements intersect at a common resource in the transformed space.

9. (Previously Presented) The method of Claim 1, wherein the non-linear expected value function represents a statistical expectation of the value function at a given resource allocation and for a given demand distribution.

10. (Original) The method of Claim 1, wherein the transforming step involves taking a transformation of the product space to provide the working transformed space wherein the distribution induced on the resources is transformed into a distribution with zero mean and unit variance.

11. (Previously Presented) A computer-implemented method comprising:

optimizing a multivariate representation of resources using multiple single-variable optimizations, wherein the resources are used in producing a set of products, and the resources, the set of products and their respective

connectivities are represented in a product space plan, the optimizing comprising

converting a non-linear expected value function associated with the resources and products into a closed form expression;

transforming the product space plan into a working transformed space plan wherein:

the products are transformed into working elements,

the transforming step involves taking a transformation of the product space to provide the working transformed space,

the distribution induced on the resources is transformed into a distribution with zero mean and unit variance, and

the transformation includes an inverse Cholesky transformation of the product space to provide the working transformed space;

performing a loading step to form elemental blocks as a function of a single variable of the multivariate representation with elements being loaded with resources that gate production of the element;

examining the elemental blocks to determine if a first element has not been loaded with a corresponding first resource that gates production of the first element;

if the examining indicates that the first element has not been loaded with the first resource, performing a re-loading step to form elemental blocks as a function of a single variable of the multivariate representation with the first element being reloaded with the first resource;

solving for the maximum of each elemental block over each associated single variable of the multivariate representation, wherein the solving is performed by a computer; and

determining and presenting the optimum level of resources as a function of the solved for maximums.

12-30. (Canceled)

31. (Previously Presented) The method of claim 1, wherein the presenting consists of storing, in a memory, the optimum level of resources as a function of the solved for maximums.

32. (Canceled)